

## Health problems in healthcare workers: A review

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### ABSTRACT

Much has been written about the well-being and quality of patients in recent years but little attention has been focused on well-being of healthcare workers (HCWs) who provide comprehensive healthcare to patients. It has been found that the HCWs are more stressed because of less staffs, increasing work load, longer working hours, high clientele expectation and peculiar problems and hazards of work place. There is increased morbidity in HCWs in comparison to general population. Though they are aware, measures of well being, engaging the HCWs in promotion of their workplace and making changes to enhance its realization needs to be done to improve their health by themselves, at administrative and institutional level.

**Keywords:** Healthcare workers, health problems, occupational hazards

### Introduction

Healthcare workers (HCWs) deliver care and services to sick and ailing either directly as doctors and nurses or indirectly as assistants, technicians, aides or medical waste handlers. Much has been studied and written about the well-being and quality of care of patients and great strides have been made in the assessment of healthcare of patients, but little attention has been focused on the well-being of HCWs. Galen the Greek physician (130-200 AD) had said, "The physician will hardly be thought very careful of the health of his patients if he neglects his own". In fact many physicians and other HCWs have lost sight of their own personal health and well-being while they confront the stresses of increased work load, rapidly expanding knowledge base, increasing government regulations, and malpractice suits and how to balance their personal and professional lives. In this article, an attempt is made to elaborate on the problems, prevalence, causes and remedial measures of health problems of HCWs.

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### Definition and Classification of HCWs

HCWs and professionals are all people engaged in actions whose primary intent is to enhance health. They study, diagnose, treat and prevent human illness, injury and other physical and mental impairments in accordance with the needs of the populations they serve. They also conduct research and improve or develop concepts, theories and operational methods to advance evidence-based healthcare. Their duties also include the supervision of other HCWs.<sup>[1]</sup>

The international classification of HCWs includes generalized medical practitioners, specialist medical practitioners, nursing professionals, midwifery professionals, traditional and complementary medicine professionals, paramedical practitioners, dentists, pharmacists, environmental and occupational health and hygiene professionals, physiotherapists, dieticians and nutritionists, audiologists and speech therapists, optometrists and ophthalmic opticians, medical and pathology laboratory technicians, paramedical technicians and assistants, medical and dental prosthetic technicians and their assistant or aides.<sup>[2]</sup>

### Occupational Health and Hazards among HCWs

Modern technology has made healthcare very complex with many hazards. The type of hazards faced by the HCWs are physical,

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chemical, biological, radiation, reproductive health, stress, psychiatric disorders, stalking by patients and violence.<sup>[3]</sup> Needle stick injuries (NSIs), radiation exposure, violence, psychiatric disorders, and suicides are common in HCWs [Table 1].

They are at high risk for musculoskeletal disorders, due to patient handling, compounded by increasing number of obese patients. Despite potential for exposure to hazards, many HCWs lack awareness about prevention. Also the system is not conducive, policies of prevention not clear, inaccessible, or there is attitude problem. Hence, HCWs continue to suffer, more so in developing countries.

### Physical hazards

Major physical injuries in HCWs are musculoskeletal disorders seen highest in nurses, and orderlies. It is seen more than seven times of other industries, due to patient handling, positioning, lifting, bed making in extremely awkward postures, transferring to bed, chair, toilet, for diagnostics and therapy. These problems are compounded by increasing number of obese patients. The Occupational Safety and Health Administration (OSHA) reports that 20% nurses leave patient care positions because of such risks. Sprains, strains are reported very often. Shoulders, low back, calf muscles, and hand muscles are most affected body parts. A study has revealed specialty-related musculoskeletal diseases affect mostly dental professionals at very early stage of their careers.

### Chemical hazards

HCWs are exposed to a variety of chemical hazards including cleaning agents used for housekeeping throughout the hospital and waiting areas. The primary routes of exposure to cleaning agents are inhalation of aerosolized droplets, vapors and skin exposure. Some of these chemicals are Ethylene oxide, Formaldehyde, Gluteraldehyde, Methyl methacrylate, Gaseous by-products, Latex and Mercury. All these chemicals lead to irritation of the eyes, respiratory airways (causing sore throat, cough, and nasal irritation) and prolonged exposure may result in pneumonitis, hypersensitivity and asthma. Direct contact with the skin may result in itching, burning, redness, swelling, and cracking. Handling of many medications including anti neoplastic and other drugs is hazardous as this can cause skin rashes, and cancer. Many hospitals around the world are phasing out the mercury use in thermometers and BP apparatus.

### Biological hazards

HCWs are exposed to a variety of infectious diseases [Table 2].

The primary routes of getting affected are direct contact, droplets, and airborne. Influenza, measles, rhinovirus, varicella, and SARS viruses can all be transmitted in healthcare settings by the airborne route. The Centers for Disease Control (CDC) report that more than 40% of the NSIs are suffered by nursing personnel even in developed countries. The circumstances in which most NSIs occur involve manipulating a needle (26%), sharp disposal (21%), collision with a worker or sharp (10%),

**Table 1: The frequency of occupational health hazards of HCWs**

Health Experiences of HCWs	Frequency (n=200) yes (%)
Biological hazards	79 (39.5)
Sharp-related injuries	43 (21.5)
Cuts and wounds	34 (17)
Direct contact with contaminated specimens	21 (10.5)
Airborne diseases	18 (9)
Infectious disease and or Infections	15 (7.5)
Other (blood borne pathogens, vector borne diseases)	15 (7.5)
Non-biological hazards	63 (31.5)
Stress	43 (21.5)
Physical, psychological, social and or sexual abuse	21 (10.5)
Musculoskeletal Injuries	21 (10.5)
Slips, trips and or falls	12 (6)
Fractures	10 (5)
Others (chemical spills, noise, burns and radiation)	20 (10)

**Table 2: Some biological hazards for HCWs by route of transmission**

Blood borne	Droplet	Airborne	Direct contact
HBV	Influenza virus	Measles	<i>Sarcoptes scabiei</i>
HCV	Rubella virus	<i>M. tuberculosis</i>	HSV 1 or 2
HIV	<i>N. meningitidis</i>	Varicella zoster virus	<i>Pseudomonas aeruginosa</i>

clean-up (9%), and recapping needles (5%) or surgery. About one million annual accidental NSI have been reported every year in China, translating into one HCW getting an NSI every 30 seconds. The most common blood borne risks are of HBV, HCV, and HIV infection. WHO estimates that in 2003 approximately 16,000 HCV infections, 66,000 HBV infections and 1000 HIV infections occurred in HCWs worldwide from NSI.

### Radiation hazards

Ionizing radiation from X-ray machines, fluoroscopes, and computed tomography used for diagnostic and therapeutic procedures, image-guided procedures, cardiac catheterization, angiograms, pain management, and others are hazardous. Non-ionizing electromagnetic radiation has less energy and, therefore, is not powerful enough to cause ionization (or removal of electrons) of molecules.

### Reproductive health hazards

Exposure to reproductive hazards in the workplace is an increasing health concern and can involve reproductive health such as menstruation, ovulation, fertility, and quality of life, and effects on the fetus. Attention is now shifting from concern for the pregnant woman and the fetus, to the entire spectrum of health hazards in the reproductive system of both genders. Reproductive hazards may cause infertility, miscarriage, and birth defects. Potential health effects also include development disorders in children. Agents which cause reproductive

hazards include lead (chemical), radiation (physical), and viruses (biological).

## Violence

*"No physician, however conscientious or careful, can tell what day or hour he may not be the object of some undeserved attack, malicious accusation, black mail or suit for damages."* WHO reports that workplace violence, a phenomenon affecting every country, every workplace and every professional group, is such a common problem that it can be characterized as an epidemic. In all healthcare areas, employees face the risk of being a victim of violence. Workplace violence is one of the most complex and dangerous hazards faced by resident doctors, nurses and helpers. In healthcare, there is an increased anticipation of violence due to several factors, a patient population especially under the influence of intoxicants such as drugs and alcohol, metabolic disorders, trauma, psychosis, or personality disorders. It may also be due to increased stress levels in patients and relatives, long waiting hours, unrestricted visitor access, overcrowding and so on. Workplace violence can have a negative impact on both HCWs as well as patients.

## Physician burnout

Physician burnout is an under-recognized and under-reported problem, characterized by a state of mental exhaustion, depersonalization, and a decreased sense of personal accomplishment. It affects more than 60% of HCWs. If unrecognized, the costs to the physician and to the healthcare system can be enormous because physician burnout is associated with increased rates of depression, alcohol and drug abuse, divorce, suicide, medical errors, and attrition. If properly recognized, appropriate treatments are available. Until recently, most initiatives to address physician burnout have focused on improving the resilience of individual physicians. These measures are necessary but insufficient. It is now recognized that organizations have a major role in causing, preventing, and mitigating physician burnout. Burnout must be addressed by organizational change.<sup>[4]</sup>

## Sickness absenteeism

In a cross-sectional study, on sickness absenteeism in a teaching hospital in Tehran, the sickness absence rate (SAR) and absence frequency rate (AFR) were 0.011 and 0.68, respectively. Job type was the only factor that had a significant correlation with sickness absenteeism. A significant relationship was found between the nursing group and sickness absence episodes. The major disease-causing sicknesses were flu (21%) and musculoskeletal disorders (18.9%). Based on these findings, it can be concluded that factors such as availability of the flu vaccine and providing principles of personal protection and infection control can reduce sickness absence due to infectious diseases.<sup>[5]</sup>

## Morbidity Status of HCWs

### Metabolic syndrome and obesity

Metabolic syndrome and obesity are risk factors for developing type 2 diabetes mellitus, cardiovascular disease, stroke and cancer.

There is evidence worldwide of the high prevalence of these pathologies in HCWs. Even though HCWs are a group considered to be well informed about etiology and risks of overweight and obesity, studies conducted in most countries including USA, Mexico, South Africa and Nigeria have consistently found them to be disproportionately having a higher risk of overweight and obesity compared to the general population. In a cross-sectional study in England, obesity prevalence was high across all occupational groups including nurses, (25.1%) other healthcare professionals, (14.4%) non-health-related occupations (23.5%) and unregistered HCWs who had the highest prevalence of obesity (31.9%).<sup>[6]</sup> In another study from Botswana, 34% of the hospital HCWs had metabolic syndrome, 28.7% were obese, and 27.3% were overweight. Female gender was found to be strongly associated with metabolic syndrome.<sup>[7]</sup> In a study from India, Ramachandran and colleague surveyed 2499 doctors from urban and semi-urban areas and found that these physicians had a higher prevalence of cardiovascular risk factors (obesity, metabolic syndrome, hypertension, and impaired glucose tolerance) compared to age-matched individuals from the general population.<sup>[8]</sup>

### Hypertension

In a cross-sectional study by Sobrion *et al.*, out of 485 normotensive HCWs prevalence of masked hypertension was 23.9%. The most prevalent-associated cardiovascular risk factors in the total population were smoking (24.9%), dyslipidemia (16.4%), a family history of premature cardiovascular disease (15.9%), and obesity (7.4%). A total of 45.4% of individuals had a family history of hypertension. The authors have concluded that the prevalence of masked hypertension in HCWs in Spain is almost 25% and recommended monitoring of 24-hour ambulatory BP monitoring in routine occupational health checks in HCWs, especially men.<sup>[9]</sup>

### Diabetes

In a longitudinal study to assess the incidence and risk of type 2 diabetes mellitus between female nurses and female non-nurses where a total of 1,11,670 subjects were selected (55,835 nurses and 55,835 non-nurses) it was found that female nurses who were diagnosed with diabetes were younger compared with the non-nurses. However, the results show that the nurses showed a lower risk of developing diabetes compared with the non-nurses. The low degree of diabetes development among the nurses may be attributable to the fact that nurses possess substantial knowledge on healthcare and on healthy behaviors. The results of this study can be used as a reference to assess occupational risks facing nursing staff, prevent diabetes development, and promote health education.<sup>[10]</sup>

### Mental health, suicides, substance misuse

HCWs report high levels of workplace stress, burnout and other "work-related" mental illness. One study suggested nursing staff had the highest level of "work-related" mental illness. Nursing is an extremely tough profession. When they are at work they are

either full on or not, and therefore it is quite difficult for them to function properly if not well. A study of suicide in HCWs reports that the most common method was self-poisoning, often with drugs taken from work and anesthetists are at particular risk in many suicide deaths. All HCWs appear to be at risk of substance misuse, partly due to relatively easy access and tendency to self-medicate. There are high rates of alcohol and substance misuse among doctors, with emerging evidence of similar problems among other HCWs. Many HCWs, especially doctors and nurses are reluctant to seek help when they suffer from symptoms of mental disorder because of career progression. In the case of mental disorder, there is evidence that concerns over confidentiality are one of the main barriers preventing HCWs seeking help.

### Mortality rates and causes among physicians

Though little is known about physicians' age at death or causes of death, their mortality is of interest because physicians' personal health habits may affect their practice, reflect their lifestyle choices and if so physicians health-related education and high socioeconomic strata should lead to lower relative mortality. In a systematic analysis of 572 obituaries in BMJ (1995-1996) DJM Wright had found that doctors born in Indian subcontinent died earlier than those born in UK.<sup>[11]</sup> In another study by Erica Frank<sup>[12]</sup>, it was found that the average age at death of US physicians was older than for other same-race professionals and non-professionals. The top 10 causes of death for physicians were essentially the same as those of the general population, although they were more likely to die from cerebrovascular disease, accidents, and suicide, and less likely to die from chronic obstructive pulmonary disease, pneumonia/influenza, or liver disease than were other professionals. They had found lower mortality rates from chronic liver disease and cirrhosis and found that physicians are less likely to completely abstain from alcohol than others but they drink smaller amounts when they consume. Physicians' lower lung cancer is also highly consistent with physicians' helping to lead the smoking cessation movement for some time. Smoking rates were <4% for both male and female physicians versus >25% for the general population.

### Which doctors die first?

In a national daily newspaper in November 2017, it was published that doctors, who are supposed to be professionals helping people live longer, die young compared to members of general public in Kerala. While the life expectancy of an Indian adult is 67.9 years, and that of a "Malayali" (as a native of Kerala is called) is 74.9 years, mean 'age of death' of a Malayali doctor was 61.75 years. This is surprising as it is expected that doctors should live longer, as they know what is good for them. There are several studies supporting the fact that doctors do not take care of their own health any better than is to be expected. Some studies report that doctors actually take fewer vaccinations, are careless about controlling their cardiovascular risk factors and receive fewer screening tests for cancer than the general population.

### Which doctors by profession live longer?

Recent studies in UK have shown alarming trends for those working in the medical field: The specialty can determine how long you live. To put simply, there is such a thing as life expectancy by profession. So which doctors live the longest? Research has shown that, for example, if you are an anesthetist, you can expect a lifespan up to 10 years shorter than that of your colleagues in other fields, at just over 73 years. General practitioners enjoy a lifespan of almost 79 years. Pediatricians and psychiatrists suffer earlier mortality (psychiatrists seem to fall victim to IHD, although the research does not mention why) [Table 3].

### Remedial measures

Some of the HCWs are unaware that they are stressed. They do not have any formal training in de-stressing. They are usually not amenable to suggestions and deny if others identify the signs of stress in them. Organizations have a major role in causing, preventing, and mitigating physician burnout. Healthcare organizations must embrace their responsibility to build an efficient practice environment. Specific leadership behaviors and positive organizational cultures are required to decrease burnout of HCWs. There must be an institutional commitment to enhancing physician autonomy and transparent communication, reducing administrative and regulatory burdens. But onus remains on the HCWs to undergo preventive health checkups, engage in physical activity, and modify their individual health risk. Medical institutions should conduct periodic health checkups for their employees and provide exercise facilities near the work site. The HCWs should do exercise 30-60 minutes 5-7 days a week and should use stairs and office-place stepping device. The HCWs should be a role model for the patient and practice what they preach.<sup>[13]</sup> Health managers need to ensure that healthcare is geared toward assessment of hazards suffered by HCWs, their reasons, and do everything possible for prevention.

### Conclusion

When the HCWs are well, they are best able to connect with the care for patients. However, challenges to health of HCWs are widespread, with problems such as dissatisfaction, burnout,

**Table 3: Life expectancy depending upon specialty**

Discipline	Average age at death (SD)	P
All doctors (n=3342)	76.1 (±14.2)	-
Medical (n=849)	76.6 (±14.8)	0.36
Surgical (n=488)	76.5 (±14.3)	0.50
Primary care doctors (n=1.235)	77.3 (±12.8)	0.01
Anesthetists (n=165)	71.9 (±16.5)	<0.01
Accident & Emergency (n=17)	57.5 (±16.6)	<0.01
Gynecologist and Obstetricians (n=115)	76.1 (±15.5)	0.98
Pediatricians (n=107)	72.1 (±14.5)	0.01
Radiology (n=72)	73.8 (±12.0)	0.12
Psychiatry (n=174)	73.3 (±14.3)	0.02
Clinical Sciences (n=48)	73.1 (±14.3)	0.17
Others (n=71)	76.4 (=13.6)	Not applicable

high rates of depression, and increased suicide risk affecting their professional careers. These problems are associated with suboptimal patient care, lower patient satisfaction, decreased access to care, and increased healthcare costs. Only by applying robust measures of well-being, engaging HCWs in reflection and conversation about promoting it in their workplace, with a meaningful outcome, and making changes to enhance its realization, will HCWs thrive in their service to patients. Health managers need to ensure that healthcare is geared toward assessment of hazards suffered by HCWs, their reasons, and do everything possible for prevention.

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### Conflicts of interest

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